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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/670,577
Filing Date: September 25, 2003
Appellant(s): FRANK, COLIN

Steven A. May
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/15/2006 appealing from the Office action mailed 02/23/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,574,271	MESECHER et al	6-2003

THEODORE S. RAPPAPORT, "Wireless Communications Principles and Practice, 2nd Edition, 1996

Telecommunications Research Associates, "Understanding Emerging Wireless TechnologiesTM", 1985-2005

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim1-5, 10-14, 18-24, 27-30, 33 and 34 rejected under 35 U.S.C. 102(e) as being anticipated by Mesecher et al (US006574271B2).

Per claim 1, Mesecher discloses a method for allocating a shared communication channel among a plurality of beams in a communication system comprising a switched beam antenna system, wherein the shared communication channel comprises a plurality of orthogonal codes (see column 3 and lines 20-35), wherein the method comprises: measuring a quality of a propagation channel associated with each beam of the plurality of beams (see column 3 and lines

35-45); allocating a first portion of the plurality of orthogonal codes to a first beam of the plurality of beams and a second portion of the plurality of orthogonal codes to a second beam of the plurality of beams, wherein the first and second portions are a function of the measured quality of the propagation channels between a base station and mobile stations in the first beam and between the base station and mobile station in the second beam (see figure 14, column 6 and lines 1-6).

Per claim 2, Mesecher further teaches scheduling a first mobile station for the first beam, secheduling a second mobile station for the second beam; transmitting the first portion of the plurality of orthogonal codes to the first mobile station via the first beam; and transmitting the second portion of the plurality of orthogonal codes to the second mobile station via the second beam (see figure 14); wherein he first and second portions of the plurality of orthogonal codes are based on the measured quality of the propagation channels between the base station and the first mobile station in the first beam and the quality of the propagation channel between the base station and the second mobile station in the second beam (see column 3 and lines 30-44).

Per claims 3-5, since Mescher teaches a CDMA communication system, it is inherent that at least one control channel is assigned for each mobile terminal with in the system and the voice data or traffic information is combined with the orthogonal codes.

Per claim 10, Mescher further teaches the communication system is divided into a plurality of geographic sectors, and wherein each beam of the plurality of beams is transmitted in a same sector of the plurality of sectors (see column 2 and lines 1-9).

Per claim 11, it is inherent that for a CDMA communication system with antenna array has approximately same proportion of a total transmitted power for the sector that includes the beams because relatively speaking when the cell is evenly divided into sectors, the power provided among the sectors need to be relatively equal to each other.

Per claim 12, it is inherent for a CDMA communication system with antenna array to have more power shares when there is more average traffic load with the beam's coverage.

Per claim 13, the claim is interpreted and rejected for the same reason as set forth in claim 1.

Per claim 14, the claim is interpreted and rejected for the same reason as set forth in claim 2.

Per claims 18-20, the claim is interpreted and rejected for the same reason as set forth in claim 3-5.

Per claim 22, the claim is interpreted and rejected for the same reason as set forth in claim 10.

Per claim 23, the claim is interpreted and rejected for the same reason as set forth in claim 11.

Per claim 24, the claim is interpreted and rejected for the same reason as set forth in claim 12.

Per claim 27, the claim is interpreted and rejected for the same reason as set forth in claim 11.

Per claim 28, the claim is interpreted and rejected for the same reason as set forth in claim 11.

Per claim 29, the claim is interpreted and rejected for the same reason as set forth in claim 11.

Per claim 33, the claim is interpreted and rejected for the same reason as set forth in claim 11.

Per claim 34, the claim is interpreted and rejected for the same reason as set forth in claim 11.

Per claim 30, Mesecher further teaches that the base station system comprises a plurality of weighters, wherein each weighter of the plurality of weighters is coupled to the processor and is further coupled to an array element of the plurality of array elements, and wherein the processor conveys a plurality of sets of weighting coefficients to the weighters (see figure 16 and column 6 and lines 20-30).

Allowable Subject Matter

3. Claims 25, 26, 31 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior art of record doesn't teaches that if no demand for the shared channel exists in the second beam for a given time slot, transmits the same shared channel transmission in the second beam as in the first beam and if no demand for the shared channel exists in the second beam for a given time slot, transmits noise in the second beam using the orthogonal codes of the shared data channel unused by the first beam.

(10) Response to Argument

The appellant argues that prior art of record, Mesecher reference, doesn't teaches utilizing orthogonal codes among beams and further contends that the pseudo-random codes in which taught by Mesecher is not an orthogonal code. The examiner respectfully disagrees and has to say that the pseudorandom code in which are well known terms in the Code Division Multiple Access (CDMA) or Direct Sequence Spread Spectrum technology (please see Mescher's background invention and figure 2 for detail description of CDMA technology). And

such technology had been put in to applications especially for military usage since WWII. First of all, the term "orthogonal" by telecommunications definition, it is a mathematical relationship among separate channels using different "codes" (or scrambling algorithms), in case here would be pseudo random chip code sequence in order to scramble original data and according to the characteristic of the code in which make one spread signal different or orthogonal from the other spread signal with different code. For the receiving part, only the receiver with the same code can despread one of received composite signal that contains more than one spread signal (see column 3, lines 45-65).

Furthermore if the appellant wants to emphasize the orthogonal code as the Walsh code (or known as a Walsh function), the examiner believes that utilize such code is commonly well known and used in any typical CDMA system, e.g. IS-95 CDMA, the second generation of cellular wireless communication system (see exhibition 1).

Bottom line is regardless what kind of term the reference is used for defining the code as long as it mentions CDMA communication system and pilot signal, one of ordinary skill in the art knows that the codes are the keys to separate/be orthogonal one channel from the other since every users/connection are sharing same spectrum (see exhibition 2, figure 11.14 and page 573 and 574). Thus, for the downlink, which is the base station toward multiple mobile terminals within its vicinity, the pilot signal, and the traffic channels from base station to the mobile terminals must all be spread by or mixed with its assigned pseudo random chip code sequence (see column 1 and lines 26-36) or orthogonal code or Walsh code crystal clearly even that such code doesn't associate with the term "orthogonal".

The appellant further argues that Mesecher reference doesn't teaches the terms "switched beam antenna system" and only teaches "an adaptive beam steering system". The examiner respectfully disagrees. First of all, the examiner believes that both system is very similar and is classified as a smart antenna system since they share many hardware characteristics and are distinguished primarily by their adaptive intelligence in which is supported by appellant's Background of Invention, the cited portion of the text of appellant's specification (pages 1 and 2) states:

> There are two primary types of smart antenna systems, switched beam antenna systems and adaptive antenna systems. In a cellular communication system, a switched beam antenna system comprises a use of multiple predetermined, fixed beams in a sector of a cell. The outputs of the multiple antenna elements of the switched beam antenna system are combined in such a way as to form narrow, directional beams that are spatially selective. As a target MS moves through the sector, the switched beam system switches the information intended for the MS from one beam to another. That is, when the MS is in a first beam of the multiple beams, all of the transmit power available in the sector is allocated to the first beam. When the MS is in a second beam of the multiple beams, all of the transmit power available to the sector is allocated to the second beam (emphasis added).

Frankly speaking, the adaptive one is smarter than the switched beam antenna because one is tracking and the other is fixed beams (sectors). So, does Mesecher reference teach the switched beam antenna system? The examiner's answer will be yes. Based on Mesecher's title, one ordinary skill in the art knows Mesecher is teaching an adaptive algorithm for a spread spectrum (CDMA) system in order to improve the capacity of the system. In his background invention, he provides the fundamental technology CDMA (see column 1) system first then brings out that most CDMA systems utilize some form of adaptive power control (see column 1 and lines 60-65). On top of that, one technique is introduced in which is sectorization known as

switched beam antenna system (see column 2 and lines 1-15, in which is consistent with appellant's owe definition of switched beam antenna system to improve power control, the cited portion of the text of Mesecher, states:

> Although adaptive power control reduces interference between signals in the same bandwidth, interference still exists limiting the capacity of the system. One technique for increasing the number of signals using the same radio frequency (RF) spectrum is to use sectorization. In sectorization, a base station uses directional antennas to divide the base station's operating area into a number of sectors. As a result, interference between signals in differing sectors is reduced. However, signals within the same bandwidth within the same sector interfere with one another. Additionally, sectorized base stations commonly assign different frequencies to adjoining sectors decreasing the spectral efficiency for a given frequency bandwidth. Accordingly, there exists a need for a system which further improves the signal quality of received signals without increasing transmitter power levels.

However, he further reveals that by utilizing such technique alone is still insufficient and further improvement is required in order to at least provide the same signal quality without increasing transmitter power levels. Thus, by introducing the combination using of CDMA system with switched beam antenna system, Mesecher shows how his adaptive algorithm to achieve the improvement and work with either the switched beam antenna system or adaptive beam steering system. Clearly, such adaptive algorithm is suitable for one technique switched beam antenna system is also good for adaptive beam steering (see column 6 and lines 1-6, "[t]he invention **also** provides a technique for adaptive beam steering..."). Therefore, Mesecher clearly teaches that his invention in which an adaptive algorithm for improve power control for a smart antenna system including switched beam antenna and adaptive beam steering systems.

(11) Related Proceeding(s) Appendix

Copies of the court or Board decision(s) identified in the Related Appeals and Interferences section of this examiner's answer are provided herein.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

January 18, 2007

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